

Preoperative Fear and Anxiety Related to Dental Implant Surgery: A Cross-Sectional Questionnaire Study.

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Abstract:

Background: Dental implant therapy is a predictable treatment modality for the replacement of missing teeth. Despite its high success rates, many patients experience fear and anxiety before implant surgery, which may influence treatment acceptance, patient cooperation, and postoperative outcomes. With aim to assess the prevalence and determinants of preoperative fear and anxiety among patients scheduled for dental implant surgery. **Materials and Methods:** A cross-sectional questionnaire-based study was conducted among 200 patients scheduled for dental implant placement at a private dental institution. A structured questionnaire consisting of demographic details, previous dental experiences, and implant-related concerns was administered. Anxiety levels were measured using the Modified Dental Anxiety Scale (MDAS). Descriptive statistics, Chi-square tests, and logistic regression analyses were performed. Statistical significance was set at $p < 0.05$. **Results:** Among the participants, 62% reported moderate-to-high anxiety before implant surgery. Fear of pain (78%), drilling procedures (65%), and surgical complications (58%) were the most commonly reported concerns. Female participants demonstrated significantly higher anxiety levels compared to males ($p = 0.01$). Younger patients (<40 years) showed greater anxiety than older individuals ($p = 0.03$). Previous negative dental experiences were significantly associated with elevated anxiety levels ($p < 0.001$). **Conclusion:** To conclude, preoperative fear and anxiety are common among patients undergoing dental implant surgery. Early identification and management of anxious patients may improve treatment acceptance and overall patient experience.

Keywords: Dental implant, anxiety, fear, preoperative assessment, questionnaire study, dental surgery.

Introduction

Dental implants have become one of the most predictable and successful treatment options for the replacement of missing teeth.^[1] Improvements in implant design, surgical techniques, biomaterials, and digital treatment planning have significantly enhanced treatment outcomes and patient satisfaction.^[2] Despite these advances, many patients continue to experience fear and anxiety before undergoing implant surgery. The anticipation of a surgical procedure, concerns regarding pain, injections, drilling, and possible complications often contribute to psychological distress among patients scheduled for implant placement.^[3]

Dental anxiety is defined as an emotional state characterized by apprehension and nervousness associated with dental treatment. It has been recognized as an important factor affecting patient behavior, treatment acceptance, and compliance.^[4-7] Patients with high levels of anxiety may

postpone or avoid dental treatment, which can adversely affect oral health and quality of life. Previous studies have shown that anxiety associated with oral surgical procedures can negatively influence patient cooperation during treatment and may affect postoperative recovery and satisfaction. Although dental implant therapy is generally performed under local anesthesia with minimal discomfort, misconceptions regarding the surgical nature of the procedure often lead to increased fear among patients.^[8] Factors such as previous negative dental experiences, fear of pain, fear of injections, and lack of adequate knowledge regarding implant procedures have been identified as significant contributors to anxiety. Understanding these factors is essential for clinicians to provide effective patient counseling and implement strategies to minimize anxiety before treatment.^[9] Limited information is available regarding preoperative fear and anxiety related to dental implant surgery among the Indian population. Therefore, the present study was undertaken to evaluate the prevalence of fear and anxiety among patients scheduled for dental implant placement and to identify the factors associated with increased anxiety levels.^[10]

Materials and Methods

A cross-sectional questionnaire-based study was conducted among patients scheduled for dental implant surgery. Ethical approval was obtained from the Institutional Ethics Committee before the commencement of the study. All participants were informed about the objectives of the study, and written informed consent was obtained from each participant prior to enrolment.

The study included patients aged 18 years and above who were scheduled to undergo dental implant placement and were willing to participate in the study. Patients with diagnosed psychiatric disorders, individuals receiving anxiolytic medications, and those requiring emergency dental treatment were excluded from the study.

A total of 200 patients were recruited using a convenience sampling method. Data were collected using a structured self-administered questionnaire consisting of three sections. The first section recorded demographic information including age, gender, and educational status. The second section assessed implant-related fears such as fear of pain, injections, drilling procedures, surgical complications, implant failure, and postoperative swelling. The third section evaluated anxiety levels using the Modified Dental Anxiety Scale (MDAS), a validated instrument widely used for assessing dental anxiety.

The MDAS consists of five questions, each scored on a five-point Likert scale ranging from one to five. The total score ranges from 5 to 25. Scores between 5 and 10 were categorized as low anxiety, scores between 11 and 18 as moderate anxiety, and scores of 19 or above as high anxiety.

The collected data were entered into Microsoft Excel and analyzed using SPSS version 25.0. Descriptive statistics were used to calculate frequencies and percentages. Associations between demographic variables and anxiety levels were evaluated using the Chi-square test. Logistic regression analysis was performed to identify predictors of moderate-to-high anxiety. Statistical significance was established at a p-value less than 0.05.

Results

A total of 200 patients participated in the study. Among them, 110 participants (55%) were males and 90 participants (45%) were females. The majority of participants belonged to the age group of 31–40 years, followed by the age group of 41–50 years. Assessment of anxiety

levels revealed that 76 participants (38%) exhibited low anxiety, 92 participants (46%) demonstrated moderate anxiety, and 32 participants (16%) reported high anxiety levels. Overall, 62% of the participants experienced moderate-to-high anxiety before dental implant surgery. (Table 1)

Anxiety Level	Frequency	Percentage (%)
Low	76	38.0
Moderate	92	46.0
High	32	16.0

Table 1: Distribution of Anxiety Levels

Analysis of implant-related fears demonstrated that fear of pain during surgery was the most frequently reported concern, affecting 78% of participants. Fear of drilling procedures was reported by 65% of participants, while 58% expressed concerns regarding surgical complications. Fear of injections was observed in 52% of participants, whereas concerns regarding implant failure and postoperative swelling were reported by 48% and 45% of participants, respectively. (Table 2)

Cause of Fear	Frequency	Percentage (%)
Pain during surgery	156	78.0
Drilling procedure	130	65.0
Surgical complications	116	58.0
Injection administration	104	52.0
Implant failure	96	48.0
Postoperative swelling	90	45.0

Table 2: Common Causes of Fear Related to Implant Surgery

Comparison of anxiety levels according to gender revealed a statistically significant difference. Female participants demonstrated higher levels of moderate-to-high anxiety compared with male participants ($p = 0.01$). Similarly, younger participants below 40 years of age exhibited significantly greater anxiety compared with older age groups ($p = 0.03$). (Table 3)

Gender	Low Anxiety	Moderate/High Anxiety	Total
Male	52	58	110
Female	24	66	90

Chi-square = 6.52, $p = 0.01$, Female participants demonstrated significantly higher anxiety levels compared with male participants.

Table 3: Anxiety Level According to Gender

The influence of previous dental experiences on anxiety levels was also evaluated. Participants who reported a previous negative dental experience demonstrated significantly higher anxiety levels than those without such experiences ($p < 0.001$). (Table 4)

Previous Negative Experience	Low Anxiety	Moderate/High Anxiety
Yes	18	62
No	58	62

Chi-square = 14.36, $p < 0.001$, Participants with previous unpleasant dental experiences reported significantly greater anxiety.

Table 4: Association between previous negative dental experience and anxiety

Logistic regression analysis identified female gender, younger age, fear of pain, and previous negative dental experiences as significant predictors of moderate-to-high anxiety prior to implant surgery. (Table 5)

Variable	Odds Ratio (OR)	95% CI	p-value
Female gender	1.89	1.12–3.25	0.01
Age <40 years	1.74	1.03–2.92	0.03
Previous negative dental experience	3.12	1.78–5.47	<0.001
Fear of pain	2.84	1.45–5.12	0.002

Table 5: Logistic regression analysis, predictors of moderate-to-high anxiety

Discussion

The findings of the present study indicate that fear and anxiety are common among patients undergoing dental implant surgery. More than half of the participants experienced moderate-to-high levels of anxiety before the surgical procedure. These findings highlight the importance of addressing psychological factors during treatment planning and patient management.^[11]

Fear of pain emerged as the most commonly reported concern among participants. This finding is consistent with previous studies that identified anticipated pain as a major contributor to dental anxiety. Although implant surgery is generally associated with minimal discomfort due to the use of local anesthesia and modern surgical techniques, patients often perceive the procedure as invasive and painful. Such perceptions may arise from inadequate knowledge or misinformation regarding implant treatment.^[12]

The present study also found that female participants exhibited significantly higher anxiety levels than males. Similar observations have been reported in previous investigations of dental anxiety. Differences in emotional expression, pain perception, and coping mechanisms may contribute to this gender-related variation in anxiety levels.^[13-15]

Age was another factor significantly associated with anxiety. Younger individuals demonstrated greater fear and anxiety compared with older participants. This finding may be attributed to limited exposure to dental procedures and lower levels of experience with oral surgical treatments among younger patients. Older individuals may possess greater confidence and familiarity with dental care, resulting in lower anxiety levels.^[16]

Previous negative dental experiences were identified as one of the strongest predictors of anxiety. Patients who had undergone painful or unpleasant dental treatments in the past were more likely to experience fear before implant surgery. Negative memories can influence expectations regarding future treatment and contribute to anticipatory anxiety. Therefore, clinicians should obtain a thorough dental history and identify patients who may require additional psychological support.^[17]

Effective communication and patient education play a crucial role in reducing anxiety. Providing detailed explanations regarding the surgical procedure, expected outcomes, pain management strategies, and postoperative care can improve patient confidence and reduce fear. Behavioral management techniques, relaxation methods, and anxiety-reduction protocols may further enhance the patient experience.^[18]

Assessment of patient anxiety before dental implant surgery should be considered an integral component of treatment planning. Identifying patients with elevated anxiety levels enables clinicians to provide individualized counseling, improve communication, and implement anxiety-management strategies. Such measures may enhance patient comfort, increase treatment acceptance, and improve overall satisfaction with implant therapy.^[19,20]

Conclusion

The present study demonstrated that preoperative fear and anxiety are highly prevalent among patients undergoing dental implant surgery. Fear of pain, drilling procedures, and surgical complications were the most commonly reported concerns. Female gender, younger age, previous negative dental experiences, and fear of pain were identified as significant predictors of moderate-to-high anxiety. Early recognition of anxious patients and implementation of appropriate counseling and behavioral management strategies may improve patient acceptance of implant therapy and contribute to more favorable treatment experiences.

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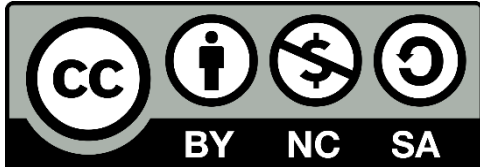
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